

ABSTRACT

TITLE

Comparative study of ischial containment socket and quadrilateral socket for functional ability in persons with unilateral transfemoral amputation.

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OBJECTIVE

To compare ischial containment socket with quadrilateral socket in transfemoral amputee persons in terms of functional ability and socket preference.

METHODOLOGY

This is an interventional study where transfemoral amputee persons ambulant with prosthetic limb fitted with quadrilateral socket were enrolled after informed consent. First assessment was done with the quadrilateral socket during the initial visit. Then they were provided with ischial containment socket. The knee component, pylon and the foot piece were retained without alteration. Each patient was given two weeks'

time to acclimatize to the new socket. At the end of two weeks all the assessments were repeated with the ischial containment socket.

OUTCOME MEASURES

Functional ability was measured with the 6-minute walk test (6MWT) and Timed Up & Go (TUG) test. Subjective preference was tested with socket comfort score and final socket preference. The secondary outcome measures were energy efficiency with Physiological Cost Index and gait parameters. The outcome measures were statistically analyzed with the paired T test.

RESULTS

The ischial containment socket (IC) was preferred by 87 % of patients who were already community ambulant with quadrilateral socket (QUAD). The socket comfort score significantly improved with the ischial containment socket. The ischial containment socket is superior to quadrilateral socket in terms of comfort. The comfortable walking speed of transfemoral amputee persons improved with the ischial containment socket. The gait velocity and stride length showed statistically significant improvement with ischial containment socket. The 6MWT, TUG and PCI showed better results with ischial containment socket even though the improvement was not statistically significant. Observable variations in gait deviations were not seen with the socket change.

CONCLUSION

The ischial containment socket is an evolutionary transfemoral socket design, which provides better comfort for transfemoral above knee amputee persons. The ischial containment socket might potentially improve walking ability and endurance in unilateral transfemoral amputee persons.

KEY WORDS

Ischial containment socket, Quadrilateral socket, Transfemoral amputation.